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NAS report: In defense of open science

"When you marry someone, you don't look for the warts and blemishes, you take a look at the whole person and at what the essence is." Francis B. Kapper, director of military technology at the Department of Defense, was not referring to anyone's prospective spouse. But he was evaluating a newly released report on scientific communication and national security that the Pentagon may have to live with for a long time. "I would like to have seen some things strengthened and others toned down," Kapper said. "But considering the prominence of the scientists and others who were on that panel... whatever they came up with I was more than willing to abide by as a considered judgment of honorable and highly expert people."

The report, prepared by a panel of the National Academy of Sciences, says that open scientific communication at meetings and among academic institutions "has been of little consequence to U.S. security.... To attempt to restrict access to basic research would require casting a net of controls over wide areas of science that could be extremely damaging to overall scientific and economic advancement as well as to military progress." At the same time, the panel found technology leakage through equipment sales—both legal and illegal—and via third countries is "substantial and serious" and includes "a significant portion" that is damaging to national security.

The predictably mixed reaction of Defense officials to the report comes on the heels of DOD's last-minute censorship of more than 100 scientific papers at a recent meeting of the Society of Photo-Optical Instrumentation Engineers (SPIE) in San Diego (SN: 9/4/82, p. 148). And while the NAS report did not directly address that incident, panel chairman Dale R. Corson said the "process" by which the Pentagon evaluates scientific papers for clearance "is wrong. There is a great deal of vagueness now, and it must be corrected." Corson, president emeritus of Cornell University, said the panel "found inadequacies in the way data [from scientific papers to be presented in public meetings or in journals] are assessed" by the government.

NAS panel members, a number of whom had been briefed in secret and top secret sessions at the Pentagon during their research, said they had seen "no documented examples" of national security damage from open scientific communication. The report concludes that the "limited and uncertain benefits" of governmental controls are "outweighed by the importance of scientific progress, which open communication accelerates, to the overall welfare of the nation."

As a result, Corson said at a press conference last week, "the panel recommends that no restrictions of any kind limiting access or communication should be applied to any area of university research, basic or applied, unless it involves technology meeting all of the following four criteria":

- The technology is developing rapidly and the time from basic science to application is short.
- The technology has "identifiable, direct military applications," or involves processes or production techniques related to military technology.
- The technology would give the Soviet Union a "significant, near-term military advantage."
- Either the United States is the only source of such information or other friendly nations that could be sources have control systems at least as secure as the United States'.

The panel did not address in detail industry-based technology research, where, the report said, there is much greater risk of information transfer damaging to national security—through espionage and legal means alike.

Panel members acknowledged, however, that "universities and other research institutions" are becoming more important targets for Soviet intelligence efforts, "as the [U.S.] government tightens its controls on other domestic sources of information." They also conceded that an imbalance exists in scientific exchange between the two countries. "We're giving more to the Soviets than they're giving us," Corson said. "They send top-level scientists here [to U.S. meetings] and we send *social scientists* there."

Nevertheless, the panelists said, the risk of conveying scientific findings "to our adversaries" is more than balanced by the enhanced knowledge that comes with scientific communication. "Over time," said Elmer B. Staats, a member of the panel and former comptroller general of the United States, "the Soviets will find some way to get it [technology]. The key is to keep ahead of them."

While the NAS report predicts that the current U.S. technological advantage over the Soviets can be maintained through a policy of open scientific communication, the Defense Department appears non-committal on the matter. Defense Secretary Caspar W. Weinberger is "torn by two things," Corson told SCIENCE NEWS, "the need for scientific communication and [reports of] large amounts of information leakage from universities [to the USSR]." In an official Pentagon reaction to the academy's findings, Defense Department spokesman James Freeman said "the panel's report will provide an excellent opportunity for future dialogue."

A possible forum for such dialogue is a proposed government task force, including a number of scientists, that would develop guidelines to implement the report's recommendations.

—J. Greenberg